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Abstracts

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Determination of etylendioxid IgE antibodies in a group of patients on hemodialysis. *S. Karlsson, K. Skogström, Dialysis Unit, Department of Internal Medicine, Medical Center Hospital Örebro, Sweden.* Thirty-seven patients were included in the investigation. They were divided in groups depending on type of membrane. These groups were divided in subgroups according to how long the patients have been on dialysis treatment. S-IgE antibodies were determined by RAST-method, with a positive test of <2.0. As a routine the membranes and blood lines were rinsed with 2.0 liter NaCl before the beginning of the dialysis. This procedure has been standard for over a year. Only one patient had a positive RAST-test, but he had no allergic symptoms. He was on dialysis with a cuprophan membrane. Another patient who earlier had an anafylactoid reaction during dialysis did not have a positive RAST-test. No significant difference between the groups (cuprophan-gambrane and CA-EVA membranes) was noticed: $\bar{x}$ was 1.06 in the cuprophan-gambrane group (when the patient with positive RAST test was excluded). $\bar{X}$ was 1.04 in the CA-EVA group. There was no difference between the subgroups in IgE antibodies level, that is to say, patients with dialysis <0.5 years; >0.5 < 2 years; >2 < 5 years; >5 years. No patient except the one earlier mentioned had a titer above 2.0. It seems as if the risk of aquiring high levels of IgE antibodies and thus allergic reactions is not as great at earlier suspected. Perhaps the storing time reduces the amount of etylendioxid. Maybe it is possible to reduce the amount of NaCl that the membranes and blood lines are rinsed with.

Small doses of calcitriol suppress secondary hyperparathyroidsm (sec HPT) and do not harm renal function in patients with chronic renal failure (CRF). *K. P. Nordal, E. Dahl, J. Halse, Medical and Surgical Departments, National Hospital, Rikshospitalet, Oslo, Norway.* Thirty patients (10 women), aged 23–71 (mean: 47) years with moderate CRF (S_{-Cr} 347 ± 196, mean ± SD μmol/liter) and evidence of stable renal function over the previous 4 months, participated in a double blind, randomized study, receiving either calcitriol or placebo for eight months. Age and diagnosis were similar in the two groups. Bone biopsies after double labeling with tetracycline was obtained at start and end. The patients were controlled at least monthly. Maximum daily calcitriol dose was set at 0.50 μg. If S_{Ca} levels reached more than 2.6 mmol/liter, treatment was suspended for 3 days and then adjusted to maintain S_{Ca} between 2.4 and 2.7 mmol/liter. Serum P was kept at less than 1.8 mmol/liter using Al-containing phosphate binder. There was no significant difference in biochemical parameters or histomorphometric bone parameters at the start. From the second month on S_{Ca} and ion Ca increased ($P < 0.01$), ALP, PTH and urinary cAMP decreased ($P < 0.01$). The calcitriol dose was reduced on 17 occasions in 8 patients due to hypercalcemia. Mean daily dose was 0.34 μg. Calcitriol treatment led to significantly lower values of all bone parameters, except fractional trabebecular bone volume, fractional doubled-labeled surfaces and mineralization lag time. S_{Cr} increased during the study period in both groups, but there was no significant difference between the two groups at any time. Conclusion: Calcitriol treatment using low dosage suppress the sec. HPT and is a safe way to preserve or restore bone metabolism in patients with moderate CRF. If hypercalcemia is avoided, no deleterious effect on renal function is seen.

Acute hemodynamic changes in the passive heymann nephritis (PHN) is mediated by the complement system via the anaphylatoxin C5A. *I. Sekse, B. M. Iversen, M. R. Daha, J. Ofstad, Med. Department A, University of Bergen, Norway, and Department of Nephrology, University of Leiden, The Netherlands.* PHN in rats is induced by infusion of antibodies towards renal tubular brushborder antigens (anti-Fx1A); the course of the diseae is dose dependent. Our hypothesis is that RBF and GFR changes in the acute phase influence the progression of the disease. We have therefore studied changes in RBF (flow probe) and GFR (Iothalamat clearance) during the first hour after infusion of anti-Fx1A antibodies into the left renal artery and compared the results with those obtained after infusion of non-complement fixing $F(ab')_2$ antibodies or C5a complement fraction. RBF and GFR measured 40 to 50 min (left kidney) after start of the different infusions are shown in the Table; each group is compared with its own control group. The results are expressed in ml/min/g kidney weight (mean ± 1 SEM). The blood pressure was not different in experimental (exp) and control (ctr) groups.

	RBF			GFR		
	exp	ctr	*P*	exp	ctr	*P*
AFx1A	3.3 ± 0.7	6.1 ± 1.0	<0.05	0.2 ± 0.1	0.5 ± 0.1	<0.02
F(ab)	6.0 ± 0.5	7.6 ± 0.9	NS	1.1 ± 0.1	0.8 ± 0.1	NS
C5a	3.7 ± 0.5	7.0 ± 0.8	<0.01	0.5 ± 0.1	0.6 ± 0.1	NS

The results demonstrate that there is an acute vasoconstriction and a fall in GFR during the first hour of antibody infusion. This is abolished when non-complement fixing fraction of Afx1A F $(ab')_2$ is injected, but the phenomenon reappears after infusion of complement C5a. Activation of the terminal complement cascade may provoke the renal vasoconstriction. A fall in filtration coefficient may explain the reduced GFR.

β_2-Microglobulin in a group of hemodialysis patients. *S. Karlsson, K. Skogström, Dialysis Unit, Dept. of Internal Medicine, Medical Center Hospital Örebro, Sweden.* The investigation was started to follow the change in β_2-M levels in a group of hemodialysis patients according to type of dialysis, type of membranes, duration of hemodialysis treatment and symptoms, such as carpal tunnel syndrome (CTS). S-β_2-M was taken before and after dialysis and repeated again in connection with change of membrane, change of dialysis method. S-β_2-M was determined with RIA-method. The patients have also answered a questionnaire, especially regarding symptoms such as CTS. The motor conduction in the median nerve was determined. The investigation included 21 patients. Twenty-one patients had cuprophan membranes. They showed an increase of postdialysis S-β_2-M with 21.1% (from 44-53.3 mg/liter). The increase of postdialysis S-β_2-M in 7 patients with CA-membranes was 15.7% (from 48.4-56). No certain change in postdialysis S-β_2-M was seen in the small groups treated with gambrane and EVA-membranes (2 patients in each group). The investigation shows that the longer the patients have been on dialysis the higher predialysis S-β_2-M valves were found (<0.5 years, 32.3; >0.5 years <2 years, 43.3; >2 years <5 years, 46.1; >5 years 53 mg/liter). The rise in postdialysis in S-β_2-M was also greater in patients with longer dialysis treatment (<0.5 years 4.2%; >0.5 years < 2 years 15.7%; > 2 years < 5 years 19.3%; < 5 years 25%). Seventeen of the 32 patients answered the questionnaire. Nine patients had symptoms of compression of the

median nerve and 7 had a considerable delay in motor conduction. There is a difference in β_2-M level depending on the time of dialysis and type of dialysis method. The investigation will continue to see if the S-β_2-M level can be used to decide what kind of membrane and type of dialysis method should be used on different types of patients.

Acute renal failure (ARF) requiring dialysis. *Einar M. Berg, Vidar Arnulf, Rolf Digre, Tor Widerøe, Regional Hospital, Trondheim, Norway.* We retrospectively examined the records of patients with ARF requiring dialysis in the period of 1975–85. Sex, age, cause of ARF, mode of presentation of ARF, type of dialysis and mortality was obtained. *Results.* Ninety-four patients were included: 30 females, mean age 49 years (range 3-80), 64 males, mean age 51 years (range 8-84). The renal cause of ARF ($N = 79$) had a mortality of 44.4%. The prerenal cause of ARF ($N = 6$) had a mortality of 50%, and the mortality was 11.1% in patients with postrenal cause of ARF ($N = 9$). ARF with non-oliguric presentation ($N = 9$) had a mortality of 22.2%; the oliguric presentation ($N = 46$) had a mortality of 39.1%, and the anuric presentation ($N = 39$) had a mortality of 48.7%. ARF caused by sepsis ($N = 22$) had a mortality of 63.6%. Postoperative ARF ($N = 16$) had a mortality of 62.5%. The mortality was 13.3% in ARF caused by glomerulonephritis ($N = 15$). Eighty-two percent of the patients ($N = 77$) were treated with hemodialysis, 18% ($N = 17$) with peritoneal dialysis. Patients who regained satisfactory renal function had a mean dialyzing time of 12 days; 9 days in patients who died. The non-oliguric patients had a mean dialyzing time of 27 days, the oliguric 12 days and anuric 7 days. Patients below 50 years of age ($N = 32$) had a mortality of 34.4%, patients 50 to 70 years had a mortality of 45.5%, over 70 years the mortality was 44.4%. *Outcome of the study*: 12.8% remained in permanent dialysis ($N = 12$), 45.7% regained satisfactory renal function ($N = 43$), 41.5% died ($N = 39$). *Conclusion.* The mortality of patients with ARF is generally high. The highest mortality rates were seen when ARF developed postoperatively (62.5%) and/or during sepsis (63.6%).

Bone mineral content (BMC) in kidney transplanted patients (PTS). Time for treatment? *B. Lindergard, J. Kurkus, University Hospital, Department of Nephrology, Lund, S-221 85 Sweden.* First-time transplanted pts, 119 during 1972–1983, were followed with BMC measurements, routinely performed on the cortical bone of the forearms, using a single photon absorption technique. We excluded pts <20 yrs of age, pts with rheumatoid arthritis and malignant diseases. BMC decreased in 93 non-diabetic pts by on average 1.4 %/yr and in 26 diabetic pts by 0.5 %/yr. In age-matched (<45 yrs) non-diabetics the BMC decreased by 0.6 %/yr compared to diabetics who decreased by 0.03 %/yr (N.S.). BMC in pts with s-creatinine >150 μmol/liter decreased significantly faster than in pts with better kidney function. In men there were no correlations between age and decrease in BMC whereas the BMC decreased faster in older women than in younger. In 9 of 11 women >45 yrs of age at transplantation and followed >4 yrs, the BMC decreased as individually significant straight lines with 1 to 5 %/yr. We feel it important to identify the fast bone mineral loosing pt because preventive trials may be necessary, especially as these patients have low bone mineral content already at the time of transplantation.

Red cell and serum folate levels in dialysis patients. *B. Kron, K. Skogström, Department of Medicine, Medical Center Hospital, Örebro, Sweden.* Folate supplementations (5 mg/day) were withdrawn in a group of 34 patients (A). B- and S-Folate and different hematological parameters (Hb, MCV, MCHC,EVF) were analyzed before, three and six months after the withdrawal. Another group of 7 dialysis patients (B) were never supplemented. They were observed in the same way. *Results.* Before withdrawal the B-Folate levels for 28 patients in group A were so high that only ">-values" were obtained in spite of many dilution steps. There is no doubt that these patients accumulated folic acid. The B-Folate mean for the remaining 6 patients in group A was 3018 nmol/liter (normal range 280-1360). The mean after 3 months was 1991 and after 6 months 1192. The mean for S-Folate before, three and six months after withdrawal was 155, 69 and 22 nmol/liter, respectively (normal range 7-34). The patients in group B have had normal red cell and serum folate levels during the study. There are no significant changes in the hematological parameters in neither of the groups during the study. *Conclusions.* Folate supplementation (5 mg/day) give rise to excessive accumulation of folic acid and may thus be questioned. There were no subnormal levels of folic acid and no changes in the hematological parameters after the withdrawal of folate supplementation.

Complement activation in plasma exchange (PE): Filters compared to centrifugation. *B. G. Stegmayr, A. Tärnvik, L. Karlsson, B. Lindqvist, Departments of Nephrology & Clinical Bacteriology, University Hospital, Umeå, Sweden.* Dialysis by filtration technique has been suggested to cause activation of plasma complement. We have applied an assay of $C3_d$, a split product of complement component C3, to estimate complement activation during plasma exchange (PE) induced by centrifugation- as compared to filtration-technique. $C3_d$ was assayed by electro-immunoassay of plasma samples obtained before and after PE from 13 patients in 31 exchanges. Upon PE by single filter (SF; $N = 7$) and centrifugation (C; $N = 9$) 2000-3000 ml plasma was exchanged 1:1 by 5% albumin. The patients' mean $C3_d$ values were lowered after PE by SF (11.7-5.4 mU/liter) and C (6.8-4.3), and significantly increased after double filtration (DF; $N = 15$) from 20.2 to 49.8 mU/liter ($t = -4.82$, $P < 0.001$). In the waste plasma there was no $C3_d$ with C while the amounts recovered did not differ significantly for SF (mean 81 SD 5 mU/PE) and DF (mean 113, SD = 42 mU/PE). In this study side effects were seen in 3 of 15 PE's by the use of DF but not by C or SF. The results indicate that, for plasma exchange, centrifugation may be less afflicted with complement activation than is filtration.

HIV antibodies in Danish dialysis patients. *G. Schmidt, B. Nielsen, B. Lindhardt, Danish Society of Nephrology and The Fibiger Institute, Copenhagen, Denmark.* Among 708 Danish patients on regular dialysis treatment (RDT) in 1986 one patient was found seropositive for antibody to human immunodeficiency virus (HIV): a 62-year-old woman who had received hemodialysis for 7 years, had received 125 units of blood, did not belong to the known AIDS risk groups, and who died shortly after the investigation from cardiac failure with no signs of infection. In a further 39 patients the ELISA test was found to be positive while Western blot and immune fluorescence test were negative. A significant correlation between the presence of this "false positive" reaction by ELISA test and previous kidney transplantation, individual number of blood transfusions, and the demonstration of lymphocytotoxic antibodies was found. Renal diagnosis, age, sex, time on RDT, type of treatment, previous or ongoing infections, travel activity, serum creatinine level, peripheral lymphocyte count, and tissue type showed no correlation to the false positive ELISA test. No patients had AIDS or AIDS-related syndromes, and no patients admitted to be homo- or bisexual.

Skeletal lesions caused by beta$_2$-microglobulin amyloidosis in a patient on chronic hemodialysis. *K. Delin, P-O. Attman, B.F.F. Zachrisson, Ö. Berlin, J. Wilske, C. Svalander, Departments of Nephrology, Radiology, Orthopaedic Surgery and Pathology. University of Göteborg, Göteborg, Sweden.* A 70-year-old woman with ESRD following nephrocalcinosis had been treated with hemodialysis for 5 years when she was operated for a bilateral carpal tunnel syndrome. Two years later she developed pain in the left hip and radiograms revealed an osteolytic lesion in the femoral neck. Incisional biopsy excluded the possibility of a malignant tumor. The lesion was curetted and filled with autologous bone transplant, and healing was uneventful. Light microscopy showed amorphous tissue with few cells, amyloid was demonstrated by a positive alkaline Kongo stain with green dicroism in polarised light. β_2-microglobulin was demonstrated with the ABC immuno-histochemical method. After her death from a myocardial infarction, amyloid could not be demonstrated in vertebral bone, myocardium, liver or renal tissue. This new form of amyloidosis has only recently been recognized as a comlication to chronic hemodialysis. The amyloid is found in synovial tissue and bone and the most common clinical manifestation is a carpal tunnel syndrome. An osteolytic lesion, as found in our patient, has been described in a limited number of cases. The amyloid contains β_2-microglobulin, a normal constituent of plasma that is almost exclusively eliminated by glomerular filtration but not by conventional hemodialysis, which even appears to increase its release to plasma. In order to prevent amyloid formation measures that affect turnover, deposition and elimination of the β_2-microglobulin are currently being studied.

Renal reactions to acute inhibition of converting enzyme in renovascular patients. *K. Delin, G. Granerus, R. Volkmann, M. Aurell, Departments of Nephrology and Clinical Physiology, University of Göteborg, Göteborg, Sweden.* Renin release can be stimulated by converting enzyme inhibition (CEI). This also interferes with renal autoregulation of GFR in a low-pressure perfused kidney. The reactions were studied by renal vein catheterization in 22 patients, and 13 have been revascularized with effect on BP. Samples were taken before and 30-minutes after 1.25 mg enalaprilat i.v. Changes in split renal function were measured by gammacamera renography in 12 patients. Means and SEM are given. BP fell from 172 ± 7/ 91 ± 3 to 139 ± 6/72 ± 3 mm Hg. CE fell from 43 ± 4 to 0.2 ± 0.04 units. Arterial renin levels rose from 5.7 ± 1.1 to 23.3 ± 5.1 ng AI/ml/hr or 4.2 ± 0.5 times. Renal V/A renin ratios increased from 1.4 ± 0.01 to 3.6 ± 1.1 on the stenotic side, and remained near unity on the contralateral one: 1.0 ± 0.04 and 1.2 ± 0.06. Extraction ratios (%) for PAH were 75.6 ± 5.0 and 89.7 ± 1.3 on the stenotic and contralateral sides, respectively, and remained unaffected by ACEI. Extraction ratios (%) for ^{51}Cr-EDTA, reflecting filtration fractions, fell from 13.3 ± 1.3 to 8.4 ± 1.6 and from 19.5 ± 0.9 to 15.0 ± 1.0 on stenotic and contralateral sides, respectively. GFR fell 5 ± 5 ml (range −18 to 36) from 29 ± 5 ml/min to 24 ± 6 on the involved side and rose 6 ± 4 (range −20 to 30) from 47 ± 4 to 53 ± 7 on the contralateral one. The filtration fraction is typically low in the involved kidney. ACEI enhances lateralization of renin secretion. Changes in the gammacamera renogram and the filtration fraction after ACEI is informative in cases where autoregulation maintains normal function in the involved kidney.

Renal function in the transplanted kidney and the remaining donor kidney after living donor transplantation. Adaptation of the adult kidney to the juvenile recipient. *A. Bohlin, U. Berg, Department of Pediatrics, Karolinska Institute, Huddinge Hospital, Stockholm, Sweden.* Renal function was evaluated in 9 transplanted children aged 1.3–11.8 years, and 9 adult kidney donors, 34–61 years old. Twelve individuals were paired donor-recipients. The remaining three children had received cadaveric kidneys, and the remaining three adults had donated kidneys, that stopped functioning. The glomerular filtration rate (GFR) and effective renal plasma flow (ERPF) were determined as the clearances of inulin and PAH, respectively. Inulin and PAH were given as a continuous infusion after a prime dose. Water diuresis was induced to enable urine sampling by spontaneous voiding. *Results.* The GFR and ERPF of the donors were approximately twice as high (68 ± 7 and 366 ± 38 ml/min resp.) as those of the recipients (36 ± 11 and 202 ± 53 ml/min resp.). Related to body surface area, however, the GFR and ERPF of therecipients (79 ± 20 and 440 ± 76 ml/min/1.73 m^2 resp.) were significantly higher than those of the donors (63 ± 6 and 338 ± 42 ml/min/1.73m^2 resp.) The serum creatinine concentration was significantly higher in the donors, 109 ± 14 μmol/liter than in the recipients, 62 ± 22 μmol/liter, which could be explained by the differences in body mass. The serum urea concentration of the recipients, 9.6 ± 3.0 mmol/liter was significantly higher than that of the donors, 5.9 + 0.7 mmol/liter. It is concluded that transplantation of an adult kidney to a child results in adaptation of renal function to the small body size of the recipient.

Continuous arteriovenous hemofiltration (CAVH) for treatment of acute renal failure (ARF) in critically ill patients. A report of 100 patients. *L. Weiss, B. G. Danielson, B. Fellström, G. Tufveson, B. Wikström, Departments of Internal Medicine and Urology, University Hospital, Uppsala, Sweden.* In our experience peritoneal dialysis and hemodialysis is of limited value as treatment of ARF in critically ill patients with multiorgan failure. In 1982 we therefore introduced CAVH as treatment of ARF in this category of patients. This is a report of outcome and clinical experience of the first 100 patients. *Material and methods.* The causes of ARF were complications to cardiac surgery (26), complications to aortic surgery (24), septicemia (16), complications to abdominal surgery (8), major burns (8), multiple trauma (5), rhabdomyolysis (3) and miscellaneous (10). The mean age was 55 years (range 13-84). All patients had other complications beside their ARF, i.e. respiratory insufficiency with a need for artificial ventilation, a need for vasopressor infusions and some even needed aortic balloon pumps to maintain systolic blood pressure. Patients with uncomplicated ARF were not treated with CAVH but had intermittent dialysis. *Results.* CAVH was maintained from 1-88 days (mean 11 days). The survival rate was 45% and only 3 patients were transferred to regular dialysis. Good uremic control was achieved when the treatment was started early in the course of uremia. A major improvement was the possibility to give adequate nutritional support even to anuric hypercatabolic patients. *Conclusions.* CAVH is an efficient treatment in critically ill patients with ARF. We therefore suggest that CAVH should be the first choice treatment in this type of patients.

Progressive decrease of serum albumin in patients undergoing long-term CAPD. *B. Lindholm, A. Tranaeus, J. Bergström, Dept. of Renal Medicine, Karolinska Institute, Huddinge University Hospital, Stockholm, Sweden.* Long-term follow-up studies on biochemical data in large CAPD populations are lacking and statistically significant long-term trends have therefore seldom been established. In this study, all available serum biochemistry data in 121 consecutive adult patients starting on CAPD between 1978 and 1984 were evaluated:

Months on CAPD:	3 (N = 96)	12 (N = 67)	24 (N = 38)	36 (N = 25)
Body weight *kg*	63.6 ± 10.7	65.6 ± 11.3^c	65.7 ± 11.4^b	65.3 ± 10.4^c
Albumin *g/liter*	36.9 ± 5.3	37.6 ± 6.1	37.3 ± 5.7	34.8 ± 6.7^b
Triglycerides *mmol/liter*	3.1 ± 1.9	3.7 ± 3.5^a	3.5 ± 4.9	3.2 ± 3.3
Cholesterol *mmol/liter*	6.9 ± 1.9	7.0 ± 2.1^b	7.0 ± 2.1	6.7 ± 2.0
Creatinine *μmol/liter*	905 ± 262	1043 ± 279^c	1059 ± 258^c	1108 ± 249^c
Urea *mmol/liter*	21.0 ± 5.7	21.5 ± 6.3	21.0 ± 6.2	21.5 ± 7.6

Mean ± SD, $^aP < 0.05$, $^bP < 0.01$, $^cP < 0.001$, Students' paired t-test, compared to 3 months.

Body weight, triglycerides, cholesterol, and creatinine increased significantly during the first year on CAPD whereas serum urea remained stable. After an initial significant rise in serum albumin (A) at 3 months (m) there was a progressive decrease in A which was significant at 36, 48 and 60 m. At 36 m, 48% of the patients had A<35 g/liter and 20% had A<30 g/liter. A correlated with: creatinine at 3, 12, 24, 36 and 60 m; urea at 36 and 48 m; cholesterol at 6 and 12 m; and, body weight at 36 m. This study shows that a major part of long-term CAPD patients have subnormal A levels indicating protein malnutrition. The correlation between A and cholesterol indicates that the initial rise of cholesterol during CAPD may reflect improved nutrition. Overall these results suggest that A can provide a rough estimate of protein malnutrition in CAPD.

Prospective study of renal hemodynamics in insulin-dependent diabetes mellitus with onset during childhood. *U. Berg, B. Thalme, Department of Pediatrics, Huddinge University Hospital, Huddinge, Sweden.* Around 40% of patients with insulin-dependent diabetes mellitus (IDDM) will develop diabetic nephropathy. It has been proposed that early renal functional changes might predict the development of diabetic nephropathy, why the aim of the present study was to perform a prospective long-term follow-up of renal function in IDDM in children. One hundred and twenty-four children, 1.5–16 years of age at onset of disease, were followed regularly by renal function and metabolic control. Follow-up time varied between 2 and 10 years. Glomerular filtration rate (GFR) and effective renal plasma flow (ERPF) were determined by clearances of inulin and PAH during water diuresis. Renal function tests were performed at onset, after 2.5 and 10 years. Metabolic control was evaluated on the basis of home controls of blood and urine glucose determinations as well as determination of HbA_1. The patients were divided in those with good and bad metabolic control as well as according to ages at onset <4yr, 4-8 yr, 8-12 yr, and 12-16 years. Patients in good control dominated during the first two years of the disease while after 5 and 10 years increasing numbers of patients were in bad metabolic control. GFR was significantly increased with mean values between 131 and 145 ml/min/1.73 m^2 in different age groups at

onset. ERPF did not differ from that of controls. No significant change in GFR was seen during follow-up in patients with onset before the age of 8 years. In patients with onset after the age of 8 years a significant increase in GFR was seen from onset to 2 years duration while a significant decrease in GFR was seen between 5 and 10 years duration. After 5 and 10 years duration significantly higher GFR was seen in patients in bad metabolic control compared to those in good control. ERPF decreased between 2 and 10 years duration. The decrease in GFR between 5 and 10 years might indicate an earlier onset of diabetic nephropathy in children.

Clinical results and quality of life of old dialysis patients. *L. Westlie, C. Kjellstrand, Regional Kidney Disease Program, Hennepin Country Medical Center, Minneapolis, Minnesota, USA.* In a prevalence study of all 79 patients alive >70 years on in-center dialysis or home dialysis, we evaluated morbidity, complications, biochemical results and "quality of life." Home patients (33%) had a higher creatinine, needed less UF, had better BP control and fewer dialysis complications (0.13 vs. 0.44). More than 90% were satisfied with social contact. Fifty percent of in-center and 30% of home patients wished to have transplants. Twenty percent of in-center patients wanted home dialysis. Ninety percent were outdoors when off dialysis, 52% participated in church activities, 71% enjoyed life very much. Forty-three percent felt their health was better than other people over age 70, 70% were able to carry out normal physical activity. Over 90% live at home. In this study aged patients were found to be good dialysis candidates. Many can dialyze at home, survive well, live independently, enjoy life and are surprisingly active.

Withdrawing life support: Do patients, families and physicians decide similarly? *I. E. Muwos, C. Kjellstrand, Karolinska Hospital, Stockholm, Sweden.* We studied whether families and physicians decided as patients do in discontinuation of life supporting treatment. We did so by comparing 66 competent patients, who themselves decided to stop dialysis to die, and 66 incompetent patients for whom families and physicians decided. We also compared comatose to demented patients and families' to physician's decision-making. There was no difference in sex, diagnosis, age, time period, decision maker (family or physician), site of residence, duration or type of dialysis, home or in-center dialysis or survival time after discontinuation. More competent than incompetent patients died at home ($P < 0.005$). All incompetent patients had emerging complications, but such complications were present in only 40 of 66 competent patients ($P < 0.0005$). In the early 1970s the physician initiated the termination of dialysis in all cases of incompetent patients; in the 1980s this had decreased to 48% ($P < 0.001$). No case was decided by court or hospital committee. There was no difference between comatose or demented incompetent patients, nor was there any important difference between family and physician decision-making. The result of our study is a reassuring indication that substitute judgement is applied appropriately. The making of the decision can safely and best be left to patient, family and physician.

Somatic and psychosocial prognostic indicators in chronic dialysis. *D. Huseby, L. Westlie, C. Kjellstrand, University of Minnesota, Karolinska Hospital, Sweden.* We prospectively studied the influence of 29 demographic, social, psychological somatic factors on survival of 78 patients, aged >70 years on chronic dialysis. Three years after the prospective evaluation, 42 patients had died, 36 survived. Only 5 factors, all psychosocial, were prognostically important. The patients who survived rated higher on the Karnofsky scale (85 vs. 78, $P < 0.002$), gained less weight between dialysis (1.5 vs. 1.9 kg, $P < 0.005$), were more often on home dialysis (16/36 vs. 9/42, $P < 0.005$), less often wished for transplantation (10/36 vs. 24/42, $P < 0.01$) and perceived their health as better (3.4 vs. 3.1, $P = 0.068$). No somatic variable predicted outcome. At 3 year re-interview, more patients were depressed, had a lower income, fewer wanted a transplant. Five had lost their living companion and the number of patients who cooked their own meals, spent time outdoors, went to church or had hobbies decreased. The Karnofsky activity decreased from 87 to 84 ($P < 0.01$) and home dialysis patients' perceived health from 3.9 to 3.4 ($P < 0.05$). Psychosocial but not somatic variables are prognostically important in survival of older patients on dialysis, and there is measurable decline in these variables during a 3-year follow-up period.

Activity of artrial natriuretic peptide in plasma before and after hemodialysis in chronic uremic patients. *L-O. Norée, U. Andersson, G. Sylvén, and E. Theodorsen-Norheim, Karolinska Institute, Renal Section, Dept. of Internal Medicine, Danderyd Hospital, Dept. of Chemistry, Karolinska Hospital, Stockholm, Sweden.* Uremic patients maintained on chronic hemodialysis retaine water which must be removed during dialysis. ANP (Atrial natriuretic peptide) is released from the volume loaded atrium. The aim of this study was to investigate the levels of ANP in plasma before and after dialysis. *Material and methods.* Nine (mean age 49 years, range 24-76, 4 female) patients with chronic uremia maintained on hemodialysis (Gambro AK 10, GS 120 H, LP 105N or Travenol CA 170) for six months to fourteen years were studied. Blood samples for determination of ANP and ADH (antiduretic hormone) were taken before and after dialysis and analyzed by RIA. Body weight before and after dialysis and TMP (transmembrane pressure) were measured as well as routine biochemical tests monitoring dialysis. *Results.* Body weight, TMP and the biochemical routine tests in the investigated dialysis did not differ from the routine care. ANP was 148 ± 98 pmol/liter before dialysis and after 81 ± 86 pmol/liter. The normal value is supposed to be less than 20 pmol/liter. ADH was 9.44 ± 3.99 pmol/liter before dialysis and after 10.5 ± 3.79 pmol/liter. The body weight increased before the investigated dialysis 2.0 kg (range 0.2-2.7 kg) and decreased during the dialysis 2.0 kg (range 1.4-2.8 kg). None of the patients had clinical signs of severe overhydration. *Conclusion.* The levels of ANP in plasma were two to seventeen times higher before and up to fifteen times higher after dialysis than in normals in spite of a decrease in body weight during dialysis. No differences in the levels of ADH before and after dialysis were observed.

Thiola therapy of cystinuric dogs, a treatment model for cystinuria. *T. Denneberg, M. Carlsson, A. Hoppe, J. O. Jeppsson, B. Kågedal, Department of Medicine, Swedish University of Agriculture Sciences, Uppsala, Departments of Nephrology and Clinical Chemistry, University Hospitals, Linköping and Malmö, Sweden.* The aim of management of cystinuria is to keep the urinary cystine concentration less than supersaturation, and thus to prevent cystine precipitation and stone formation. The most promising form of therapy is to change cystine into the more soluble mixed disulfide with D-Penicillamine or alpha-mercaptopropionylglycine (Thiola®). D-Penicillamine is effective but has serious side effects. We have earlier reported successful treatment in human cystinuric patients with individualized dosages of Thiola to patients with monitoring of free cystine and of Thiola-cysteine-disulfide excretion in the urine. Cystinuria is a well known disease in dogs (3-27% of all stones) with cystine excretion of 2-10 times greater than normal. The disease occurs in many breeds and has almost exclusively been reported in the male dog. This is the first study in dogs on pharmacokinetics and controlled clinical effect of Thiola. Ten cystinuric dogs were treated with Thiola for 3-34 months. The drug was well tolerated and few side effects occurred. Pharmacokinetic studies were determined in 8 dogs on oral administration of 16-31 mg of Thiola per kg body weight. Maximum serum/plasma concentrations ranging from 28-76 μmol/liter were found after 1-3 hours. The mean urinary excretion was 22% of the dose with a range from 0.3-58%. The plasma and urine Thiola determinations indicated that a dose interval of 12 hours would be sufficient to maintain an adequate level of Thiola in serum and urine. In 6 of the dogs free of stones at start of treatment no recurrence of stones occurred. Of 4 dogs with stones appearing at the beginning of therapy, 3 dogs experienced total stone dissolution on continuous treatment. Further growth of the stones was inhibited in the fourth dog. In conclusion Thiola besides prophylactic treatment could also be used in cystine stone dissolution.

Physical working capacity in uremic patients before and after renal transplantation. *N. Clyne, T. Jogestrand, L.-E. Lins, S. K. Pehrsson, Division of Nephrology, Cardiology, Department of Medicine and Department of Clinical Physiology, Karolinska Hospital, Stockholm, Sweden.* Heart disease is a major problem in the uremic population, accounting for a large proportion of overall morbidity and mortality. In the present longitudinal study we have examined the factors influencing uremic patients' exercise capacity before and after renal transplantation. Eleven uremic patients (mean age 41 ± 10 years) with an average GFR of 5 ± 4 before and 45 ± 19 ml/min × 1.73 m^2 ($P < 0.001$) after transplantation participated in the study. The maximal steady-state

exercise capacity, measured by standardized exercise test on a bicycle ergometer, averaged 106 ± 25 W before and 126 ± 35 W ($P < 0.05$) after transplantation. The patients interrupted because of general fatigue, leg tiredness or both, no patient experienced angina pectoris during the test. Normal exercise ECG were registered in 8 of 11 patients before and after transplantation. Three patients had unspecific ECG-changes. Total hemoglobin (THb) was 55 ± 9% before and 79 ± 14% of the expected normal after transplantation ($P < 0.01$). The increase in steady-state working capacity was correlated to the increase in THb ($r = 0.85$, $P < 0.01$). In conclusion, successful renal transplantation results in an improved working capacity. The results of the present study indicate that an increased THb may be a determinant for these patients' increased working capacity.

CAPD performed by relatives. *B. Lindqvist, G. Gillnäs, K. Lindberger, S. Lindström, B. Stegmayr, Departments of Internal Medicine, Umeå, Boden, Östersund, Sweden.* CAPD is meant to be performed by the patients. In some cases a question arises if CAPD can be performed by relatives. We now can report of such treatment in nine patients, 1979-1987. Four of them were children, 4 were old or so weak that they could not perform the treatments themselves, and 1 was a slight mentally handicapped woman. The patient with the longest treatment period so far has been two years. Technically the dialysis has been performed with few problems. In the first years peritonite incidences were reported, but the last years none. Patients so far have been contempted with the treatment modality as well as the relatives performing the treatment. The true mental situation of the relative performing the dialysis is difficult to evaluate. It has, however, so far been no signs of mental distress due to the increased responsibility. The counties have so far been very sparse in economical support to the relatives performing the dialysis. Compared to other active treatment modalities this type is a cheap alternative. Economic support to the relatives performing the dialysis is now 2500 kronor per month. Taxes will be withdrawn. In cases where the relatives have to end regular work, this will be an economic burden. The treatment modality seems possible in some cases: children; patients over 70 years of age unable to treat themselves; mentally handicapped; physically handicapped; and old patients living far from the dialysis station. However, it should be possible for relatives to be relieved of responsibility for a few periods every year, and they should get greater economic support. Naturally, it would be better to treat patients with kidney transplants in an early stage.

Imipenem in the treatment of peritonitis during continuous ambulatory peritoneal dialysis (CAPD). *C. Eriksson, R. Brönnestam, L. Carlsson, A.K. Torgersen, J. Ahlmén, Departments of of Nephrology and Bacteriology, Central Hospital, Skövde, Sweden.* Peritonitis is the most common complication of CAPD. Imipenem is a carbapenem antibiotic with an antibacterial spectrum covering most gram-negative and gram-positive aero- and anaerobic bacteria. The aim of this study was to investigate the use of imipenem in the treatment of peritonitis. *Methods.* Imipenem/cilastatin was administered in doses of 0.5 gram or 1 gram twice a day for 5 days in a four-bag dialysate exchange scheme. Imipenem in serum was analyzed with a bioassay procedure. Antibiotic regimen was then changed according to the results of the bacterial culture. Cultures from dialysate were made on day 0, 2 and 5. *Material.* Sixteen patients, mean age of 51.3 years at the start of CAPD, started imipenem therapy. Seven patients had diabetic nephropathy, 3 chronic glomerulonephropathy, 2 unspecified nephropathies and 4 patients had other different nephropathies. Mean obs. time on CAPD was 10.6 months. All patients performed 4 × 2 liter dialysate exchanges a day. *Results.* Imipenem-therapy was started in 21 peritonitis episodes. Candida was the cause of peritonitis in 3 episodes, in 4 episodes bacterial cultures were negative which was why the effect of imipenem was evaluable in 14 episodes. Peritonitis was in 9 episodes caused by Staph. epiderm., 2 Staph. aur., 2 streptococci and 1 by acinetobacter. All patients recovered clinically within the imipenem-therapy period. Relapse was only found in 1 patient. No clinical adverse effects of imipenem were found in 17 peritonitis episodes. Red discoloration of dialysate was found in a bag prepared 8 hours before intended use. *Conclusion.* Imipenem may be used intraperitoneally as initial therapy without adverse effects for 5 days with good clinical result in peritonitis treatment during CAPD.

Clinical and experimental pruritus in chronic renal failure. *M. Bäckdahl, Ö. Hägermark, L. E. Lins, Departments of Dermatology, Medicine, Karolinska Hospital, Stockholm, Sweden.* Pruritus is a distressing manifestation of chronic renal failure. The pathogenesis of uremic pruritus remains obscure, although dry skin, disturbed sweating, derangement of calcium homeostasis have been incriminated. Twenty-nine patients (27-76 years) undergoing maintenance hemodialysis were examined for dermatologic symptoms. Nineteen patients (66%) complained of more or less continuous pruritus classified as mild (34%), moderate (24%), and severe (8%). Patients with pruritus did not differ from those without pruritus regarding serum concentrations of creatinine, urea, calcium, alkaline phosphatase, nor was there any difference in duration of hemodialysis. In pruritic patients serum concentrations of parathyroid hormone were significantly higher when determined by a mid-region radioimmunoassay technique ($P < 0.01$) and higher, although not significantly, when measuring the intact parathyroid hormone molecule. Experimental pruritus was studied by comparing cutaneous reactions (itch and flare) following intradermal injections of histamine in the same uremic patients with and without pruritus and in healthy volunteers. In all uremic patients the flare responses were weaker than in controls, whereas uremic patients with pruritus tended to have increased itch responses indicating a decreased itch threshold.

Blood pressure control, peripheral renin activity, plasma aldosterone and renal hemodynamics in patients with renal scarring. *S. H. Jacobson, L.-E. Lins, Department of Medicine, Division of Nephrology, Karolinska Hospital, Stockholm, Sweden.* Pyelonephritic renal scarring is a common cause of hypertension and renal failure. We studied systolic (SBP) and diastolic (DBP) blood pressure in relation to peripheral renin activity (PRA), plasma aldosterone (p-Aldo), urinary sodium (U_{Na}) and potassium (U_K) excretion, fractional sodium (FeNa) and potassium (FeK) excretion, urinary albumin excretion (U-Alb), glomerular filtration rate (GFR) renal plasma flow (RPF), filtration fraction (FF) and total renal area (TRA) in 22 female patients with renal scarring and a history of febrile urinary tract infection and in 9 healthy age-matched women with normal urograms. The patients had significantly higher SBP, higher PRA, higher FeK, lower GFR and smaller TRA. SBP and DBP were negatively correlated with GFR and RPF and positively correlated with FeNa. The U_K/U_{Na} ratio was negatively correlated with SBP and DBP and positively correlated with PRA and p-Aldo. RPF/TRA representing an approximation of the perfusion of renal tissue and GFR/TRA were similar in patients and healthy controls. A reduction of renal tissue was thus accompanied by a proportional decrease in GFR and RPF. Patients with a high PFR/TRA and high GFR/TRA had lower SBP, DBP and U-Alb. We conclude that both renal hemodynamics and the renin system probably are involved in the pathogenesis of hypertension in patients with renal scarring and that screening determinations of U_{Na} and U_K may prove useful for detection of individuals with increased PRA and p-Aldo. We found no evidence of hyperfiltration by remnant glomeruli as a main cause of renal failure in this group of patients.

Atrial natriuretic peptide (ANP) is related to blood glucose in insulin dependent diabetes mellitus (IDDM). *S. Björck, G. Blohme, H. Herlitz, J. Hedner, T. Hedner, Departments of Clinical Pharmacology, Medicine II and Nephrology, Sahlgrenska Hospital, University of Göteborg, Sweden.* In IDDM a disturbance in renal hemodynamic regulation with an increase in glomerular filtration rate has been claimed to be important for development of nephropathy. The role of ANP in IDDM and the relation between glucose and ANP levels is not known. We measured the ANP-levels in IDDM and in control patients. ANP was determined with RIA in 15 patients with IDDM (D) of 11 years duration and a mean age of 26 years, and in 10 healthy control patients (C) matched for age. ANP was 38 ± 6 (C) and 39 ± 12 (D) pmol/liter. In the diabetic patients the blood glucose was 12 ± 4 mmol/liter and was positively correlated to ANP ($r = 0.69$, $P < 0.01$). The $HbA1_c$ was 10 ± 2% and was not related to ANP ($r = 0.23$). The serum-sodium concentration, which was 138 ± 2 mmo l/l, was inversely correlated to ANP ($r = 0.62$, $P < 0.05$). The increased level of exchangeable sodium reported in IDDM could be antipated to induce elevation of plasma ANP-levels, but we found no difference in mean ANP between D and C. In addition, there was no relationship between ANP and long-term diabetic control as reflected

by $HbA1_c$ levels. However, the plasma-ANP was significantly correlated to blood glucose. This suggests that ANP is one factor involved in the increased glomerular filtration rate, that can be induced by acute elevation of blood glucose in patients with IDDM. ANP may thus be of importance for the glomerular hyperfiltration seen early in diabetes mellitus.

Serological diagnosis of Wegener's granulomatosis. *P. Bygren, N. Rasmussen, M. Höier-Madsen, H. Thysell, A. Wiik, Nephrological Department, University of Lund, Sweden, and Statens Seruminstitut, Copenhagen, Denmark.* Wegener's granulomatosis (WG) is a multisystem disease with a severe prognosis. It is defined by the presence of a focal and necrotizing vasculitis with granuloma formation, which primarily affects vessels of the upper and lower respiratory tract. In addition most patients develop microvasculitis in glomerular capillaries, but the lesions found are common to a variety of glomerular disorders. The differential diagnosis clinically includes several "renopulmonary" disorders, such as Goodpasture's syndrome, and systemic vasculitis. Recently, the presence of antibodies against normal neutrophil cytoplasmic antigen(s) was reported in sera from patients with active WG. Indirect immunofluorescence microscopy was used (Van der Woude, F J et al, *Lancet* 1:425, 1985). Further studies strongly indicate that ANCA assay (Anti-Neutrophil-Cytoplasmic Antibodies) can be used as a specific immunological marker of Wegener's granulomatosis. We analyzed sera from 15 patients given the diagnosis WG based on clinical and histological findings. Five patients had classical granulomas and ten had necrosis and inflammatory lesions compatible with WG. Sera from 15 controls with GN were also tested: classical periarteritis nodosa (2), reumatoid vasculitis with GN (1), Henoch-Schönleins purpura (1), leucocytoclastic microvasculitis with GN (2), idiopathic rapidly progressive GN (6), saricodosis (1) and anti-GBM-induced Goodpasture syndrome (2). In support of earlier findings, the 15 patients with Wegener's granulomatosis had ANCA antibodies according to indirect IF while the 15 patients with other diseases had not.

Beta-$_2$-microglobulin (β_2 M) before and after hemodialysis (HD). *B. Wehle, J. Bergström, Department of Renal Medicine, Karolinska Institute, Huddinge University Hospital, Stockholm, Sweden.* Patients treated with HD for many years may develop arthropathy and carpal tunnel syndrome due to amyloid deposits of β_2 not passing through conventional HD membranes. The observation that plasma β_2M is higher after than before HD with cuprophane has been taken as evidence that the blood membrane contact induces an increased generation and/or release of β_2M. In these studies no correction was made for the decrease in distribution volume of β_2M due to ultrafiltration, or a correction was made only for changes in plasma volume and not for changes in total cellular volume (ECV) which should correspond to the distribution volume of β_2M. With highly permeable membranes on the other hand significant decreases of plasma β_2M have been observed after dialysis. In 6 patients we have studied the plasma β_2M (RIA, Pharmacia) before and after HD with 8 different dialysis membranes. The conc after dialysis were corrected for the decrease in ECV assuming ECV to be 20% of the body weight after dialysis (BWp) and that the change in body weight during HD (ΔBW), due to ultrafiltration, represents a change in ECV according to the formula:

$$\beta_2\text{M (corr)} = \frac{\beta_2\text{M (non corr)} \times 0.2\ \beta\text{Wp}}{0.2\ \beta\text{Wp} + \Delta\ \text{BW}}$$

The non-corrected postdialytic β_2M conc after HD with cuprophane were 22% higher than the predialysis conc, whereas the corrected values were not significantly changed. Similar results were obtained with other low-permeable membranes, e.g. cellulose acetate, polymethylmetacrylate and polycarbonate. Significant decreases of the corrected β_2M conc were observed after dialysis with high-flux membranes, such as polysulphone (−47%), polyacrylonitrile (−33%) and cellulose acetate Duo-flux (−15%). The results indicate that HD with low-permeable membranes neither releases nor eliminates β_2M, while dialysis with high-flux membranes removes β_2M.

C3b receptor (CR 1) activity on erythrocytes from patients with systemic lupus erythematosus (SLE) followed for 2 years. *E. Svarstad, B.M. Iversen, R. Matre, Med. Dept. A and Broegelmann Research Laboratory, University of Bergen, Bergen, Norway.* CR 1-receptors on erythrocytes are probably involved in transport of immune complexes to the reticuloendothelial system. An area of dispute is whether the reduced CR 1 activity found in patients with SLE is inherited or acquired. We have been following 8 patients with SLE and glomerulonephritis for 2 years, and the CR 1 activity on the erythrocytes has been measured repeatedly during this observation period. Three of the patients have undergone renal transplantation, two patients within the last 6 months, and a third 12 years ago. Four patients were clinically stable and one patient died during the observation period. The erythrocyte CR 1 was measured by means of a hemadsorption technique with cryostat section of the erythrocytes and with sheep erythrocytes sensitized with varous amount of complement as indicator cells. The two patients who developed renal failure and were kidney transplanted during the observation period showed increasing CR 1 activity after transplantation. The patient that was transplanted 12 years earlier showed high and stable CR 1 activity. One patient showed increased activity during prednisone treatment. The clincally stable patients showed low activity, and the patient who died also had low activity during the observation period. Accordingly, CR 1 activity on erythrocytes seems to normalize after renal transplantation. During the active stage of the disease, CR 1 activity is usually low. On treatment, some patients may show increased CR 1 activity whereas most do not. The data indicate that the low CR 1 activity in patients with SLE is acquired rather than inherited.

Effect of inhibition of angiotensin converting enzyme (ACE) on the elimination of hippuran in a patient with renal artery stenosis (RAS). *E. Svarstad, B. M. Iversen, M. Følling, Med. Department A and Department of Clinical Physiology, University of Bergen, Bergen, Norway.* During renal hypoperfusion ACE inhibitors can seriously disturb the autoregulation of glomerular filtration rate (GFR) while the autoregulation of renal blood flow is well preserved. In patients with RAS treatment with ACE inhibitors may cause a fall in GFR while ERPF is unchanged on the affected side, and thus increase the diagnostic sensitivity of renography using Tc-DTPA as well as 131-I-Hippuran. We have examined a 47-year-old female hypertensive with a unilateral significant RAS. The overall renal function was normal. Treatment was started with captopril 25 mg bid, and renography was performed after two and four weeks and repeated three weeks after discontinuation of captopril (control). After 64 weeks (enalapril 10 mg daily for the last 32 weeks) and 76 weeks (captopril 25 mg bid for the last 4 weeks), hippuran renographies (H-Ren) were controlled, and ERPF (ml/min) on the affected side was calculated. Iv. urography (Iv-u) verified the ipsilateral renal function.

	2 wks	4 wks	control	64 wks	76 wks
H-Ren	accumulating		normal	normal	normal
Iv-u		normal	normal		
ERPF	190 (42%)	184 (37%)	183 (40%)	230 (41%)	237 (43%)

The table illustrates a temporary lack of hippuran excretion in the affected kidney, and the isotope gradually accumluated. During control conditions and long-term treatment, elimination was normalized. Postrenal obstruction was excluded. These observations suggest a possible interference of A II with the tubular handling of PAH in conditions where the renin-angiotensin system is activated.

Prostaglandin E_2 and 6-keto-prostaglandin $F_{1\alpha}$ in nephrotic syndrome. *A. Vikse, E. Dahl, O. M. Sejersted, Department of Medicine and Institute for Experimental Medical Research, Ullevaal Hospital, Oslo, Norway.* Prostaglandin may play a role in nephrotic syndrome since inhibition of prostaglandin synthesis by non-steriodal anti-inflammatory drugs in some studies seem to be effective anti-proteinuric agents. Therefore, we examined prostaglandin excretion in 10 hospitalized, non-treated patients with nephrotic syndrome and in six normal volunteers. The patients were all normotensive and creatinine clearance was 77 ±13 ml/min. Urine was collected over a 24 hour period and cooled to 4°C immediately after voiding. A sample of the mixed 24-hour urine was kept frozen for later analysis. Prostaglandins were measured by radio-

immunoassay method after chromatographic separation on silicic acid minicolumns. The proteinuria was 8 ± 2 g/24 hr, and prostaglandin E_2 excretion 1.6 ± 0.1 nmol/24 hr in the nephrotic patients, while 1.0 ± 0.2 nmol/24 hr in six normal volunteers ($P < 0.05$). 6-Keto-prostaglandin $F_{1\alpha}$ was also increased in the nephrotic syndrome compared to normal excretion, 0.8 ± 0.1 vs. 0.5 ± 0.1 nmol/24 hr ($P < 0.05$). Both cholesterol and triglycerides were significantly increased. Peripherial renin activity was measured only in six patients and was normal. We propose that the increased prostaglandin excretion in nephrotic syndrome reflects changes in the metabolism of lipids as the precursor of prostaglandins, arachidonic acid, derives from phospholipids.

Nephro-thyreo-arthropathia—A systemic disease? *B. Lindqvist, U. Dige, K. Sondell, L. Öberg, L. Jacobsson, Departments of Internal Medicine, Cytology, Blood Bank, Diagnostic Radiology and Clinical Chemistry, University of Umeå, Umeå, Sweden.* Fatigue and pain are usual complaints by renal patients, especially those with interstitial nephritis and pyelonephritis. The reason for this so called uroarthritis is unknown. One possibility is that kidney disease in many cases is part of a systemic disease known to give pain. Well known examples are systemic lupus disease and patients with interstitial nephritis in Reiters or Bechterews diseases. We believe that there are a connection even between disease in the kidney and in the thyroid gland. Five hunded seventy patients with kidney disease were investigated on the incidence of S-antithyreoglobulin with a sensible technique and compared with blood donors. Patients with high and low titers were compared thereafter. The results shows that S-antihyreoglobulin in high titer was common in kidney patients, much more common in patients with interstitial nephritis and pyelonephritis than in glomerulonephritis or other kidney diseases, more common in patients with pain than in patients without pain, more common in patients with HLA-groups 35, 27 and 8 than in other groups, and 7 times more common in women than in men. In spite of high titers against S-antithyreoglobulin the patients with renal disease had very seldom hyperthyreosis, hypothyreosis or goiter. By investigation with ultrasonography 2/3 of the patients with high titer against S-antithyreoglobulin showed light changes in the thyroid gland. By cytological investigation after fine needle puncture of the thyroid gland, 1/3 of the same patients had a picture of thyroiditis or suspect thyroiditis. The investigation supports a connection between diseases in the thyroid and the renal medulla, and that S-antithyroglobulin in high titer is common in patients with renal disease and pain.

Side effects of high and low cyclosporine A (CyA) doses in patients with rheumatoid arthritis. *K. J. Berg, O. Førre, M. Mikkelsen, J. Narverud, O. Djøseland, H. E. Rugstad, Rikshospitalet and Oslo Sanitetsforenings Rheumatism Hospital, Oslo, Norway.* CyA was given for 26 weeks in two groups of patients with classical arthritis (RA) and normal renal function (S-creatinine < 110 μmoles/liter) at the following doses: Group I CyA 10 mg/kg/day initially, mean dose 7.8 mg/kg/day (12 patients). Group II CyA 5 mg/kg/day initially, mean dose 4.8 mg/kg/day (11 patients). Both groups were given prednisolone. Median whole blood CyA concentrations after 12 weeks were 530 Δg/liter (group I) and 365 μg/liter (group II). Median S-creatinine after 12 weeks was increased by 50% in group I ($P < 0.01$) and 29% in group II ($P < 0.01$). Creatinine clearance was reduced by 31% in group I ($P < 0.01$) and 19% in group II ($P < 0.05$). Mean arterial blood pressure was increased by 15% in group I ($P < 0.01$) and 7% in group II ($P < 0.05$). S-potassium was increased only in group I. Renal tubular function tests (urinary beta$_2$-microglobulin and glandular kallikrein excretion) which were very sensitive parameters for renal tubular damage in group I did not change during CyA treatment in group II. *In conclusion.* High CyA doses significantly reduced renal glomerular and tubular function in patients with RA. Low CyA doses reduced renal glomerular function far less and was without effects on renal tubular function.

Glomerular hyperfiltration following nephrectomy in living renal transplant donors. *S. Strandgaard, P. Skaarup, A. Kamper, N. H. von Holstein-Rathlou, P. P. Leyssac, O. Munck, Herlev Hospital and Institute of Experimental Medicine, University of Copenhagen, Denmark.* To study the development of hyperfiltration after uninephrectomy, renal clerances of ^{51}Cr-EDTA, lithium and albumin, β_2-microglobulin and immunglobulin G were measured in 14 healthy living transplant donors. GFR as measured by ^{51}Cr-EDTA clerance in the kidney that remained in the donor was 45 ± 11 (1 SD) ml/min before operation. Five days after nephrectomy the value was 61 ± 10 ml/min ($P < 0.01$) and remained unchanged after 2 months. Lithium clearance for the same kidney was 12.0 ± 4.1 ml/min before and 24.7 ± 13.4 ml/min ($P < 0.01$) five days after removal of the other kidney. For fractional lithium clearance the value rose from 0.25 ± 0.07 to 0.40 ± 0.21 ($P < 0.01$), whereas absolute proximal fluid reabsorption (GFR-$C1_{Li}$) was unchanged: 35 ± 9 ml/min versus 37 ± 14 ml/min. The protein clearances showed a rise the first 2 weeks after nephrectomy, most marked for β_2-microglobulin. Our results show that after living donor nephrectomy, an acute rise in GFR occurs in the remaining kidney, with no corresponding immediate rise in proximal tubular reabsorption. Hence, in this setting hyperfiltration may be associated with a rather marked glomerular hypertension, possibly caused by afferent arteriolar dilatation.

Long and short patency of radiocephalic arteriovenous fistulas. *B. Hylander, A. Fernström, J. Swedenborg, Departments of Internal Medicine and Surgery, Karolinska Hospital, Stockholm, Sweden.* The aim of the study was to evaluate factors influencing patency of arteriovenous fistulas for hemodialysis. The patency of eighty-three radiocephalic fistulas in 71 uremic patients was analyzed retrospectively. The study period was 1975–1985. Two types of fistulas were studied according to construction: side of radial artery to side of cephalic vein and end of cephalic vein to side of radial artery. Our results showed that early occlusion occurred in 24 fistulas (29%). Early occlusion was defined as occlusion before the fistula was used for hemodialysis. Fifty-nine fistulas were thus used for dialysis. Eighteen of these failed due to thrombosis and 41 were still open at the end of the study period or at the time of transplantation, death, or moving to other hospital. The cumulative patency after two years was 50%. Eleven reoperations were performed on "early failures" and only three were successful. Another eleven reoperations were made on "late failures", where seven were successful. Early failure was significantly more frequent in end-to-side fistulas (39%) compared to side-to-side fistulas (10%). Age had no influence on the results. Out of 38 fistulas in patients <50 years 24 were without success compared to 18 unsuccessful out of 45 fistulas in patients >50 years. *Conclusion.* Early failure was significantly higher in end-to-side fistulas. Reoperations on early failures are often unsuccessful. No difference in late occlusion between the two groups was found.